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EXAMINER	
WHITTINGTON, KENNETH	

ART UNIT	PAPER NUMBER
2862	

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Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/647,121	WOLBER ET AL.	
	Examiner	Art Unit	
	Kenneth J Whittington	2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,22-24 and 26-32* is/are rejected.

7)☒ Claim(s) *16-22,25 and 33-36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/26/04,8/26/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the electrical switch as recited in claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin

as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Abstract

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because on line 1, it contains terms that can be implied, i.e. "The invention relates to a". Simply inserting "A" in lieu thereof would obviate the objection.

The abstract is also objected to for containing legal phraseology, i.e., "means" on line 8.

Appropriate corrections are required. See MPEP § 608.01(b).

Specification

The disclosure is objected to because of the following informalities: the Specification refers to the claims on page 1, first paragraph and page 3, lines 32-34. The claim numbers and features may change during prosecution rendering such references inconsistent. Thus, such references should be removed. Appropriate correction is required.

Claim Objections

Claims 1-36 are objected to because of the following informalities:

in claim 1, line 4, the comma after "bearing" should be removed;

in claim 1, line 6, the comma after "magnet" should be removed;

in claim 12, line 2, "the handle" lacks antecedent basis";

in claim 13, line 2, "the rotation angle positions" lacks antecedent basis;

in claim 21, it is unclear how the "adjusted position" is connected to the "rotor", rather the magnet and the intermediate piece are connected having such adjusted positions;

Applicant is asked to further review the claims and their dependency chains to correct any other such issues. Appropriate corrections are required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 28 and 29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The process of injecting the a metallic stamped grid into the molded part or the process of incorporation of the conductor tracks by means of metallized plastic in the form of a MID (molded interconnected device) are not sufficiently disclosed in specification. The

specification does not provide any further steps of the processes or methods other than those listed above and recited in the claims. Thus a person having ordinary skill would not able to carry out the invention without undue experimentation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 6, 8, 9, 11, 13, 23, 27, 29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolf et al. (US 5,497,081). Regarding claims 1, 3, 9, 13 and 23, Wolf et al. discloses an adjustable angular position sensor, comprising:

a stator housing having a receptacle open on one side in a general form of a pot (See FIG. 1, item 22);

a rotor mounted completely inside the stator rotating in the stator as a rotary bearing between at least two rotation angle positions (See FIG. 1, item 24);

a magnet mounted in the rotor on the rotation axis and moved thereby (See FIG. 1, item 42);

a Hall magnetic field sensor producing a signal in association with the magnet representing the rotation angle or latching positions, the sensor mounted in the stator receptacle on the stator housing facing away from the receptacle for the rotor (See FIG. 1, item 43).

Regarding claim 4, Wolf et al. discloses conductor tracks for electrical connection of the sensor (See FIG. 13, items 144, 132 and 148).

Regarding claims 6, 27 and 29 (as best understood), Wolf et al. discloses the conductor tracks 148 molded and extend into the housing (See Wolf et al. col. 10, lines 45-65).

Regarding claims 8 and 31, Wolf et al. discloses the sensor being un-encapsulated, having bonding wires welded to the conductor tracks (See FIG. 10, items 144, welded at holes 140).

Regarding claim 11, Wolf et al. discloses the rotor having a recess for reception of a handle shaft (See FIG. 1, item 38, note reception of shaft handle end 36).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 4, 7, 9, 23 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welles (US 4,415,856) in view of Sidor et al. (US 3,988,710). Regarding claims 1, 9 and 23, Welles teaches:

a stator housing having a panel and a board (See FIG. 2, items 52 and 56);

a rotor mounted in the stator rotating in the stator as a rotary bearing between at least two rotation angle positions (See FIG. 2, items 50a and 50b);

a magnet mounted in the rotor on the rotation axis and moved thereby, which may be a bar magnet or the like (See FIG. 2, item 11 and col. 2, lines 16-19);

a Hall magnetic field sensor producing a signal in association with the magnet representing the rotation angle, the sensor mounted in the stator receptacle on the stator housing facing away from the receptacle for the rotor (See FIG. 2, items 12a, 12b).

However, Welles does not explicitly teach the housing shape. Sidor et al. teaches a housing for a rotary potentiometer comprising a pot shape housing defining a receptacle having a two-piece rotor with a magnet therein rotable with respect to Hall sensors mounted in the housing opposite the receptacle opening (See Sidor et al. FIG. 1, housing 12, 18, rotor 24 with magnet 26 and sensors 46 and 48). It would have been obvious to incorporate the housing and separable rotor as taught by Sidor et al. in the sensor arrangement of Welles. One having ordinary skill in the art would have been motivated to do so to form a compact angular position sensors and protect the sensor components from the

environment, and to provide a potentiometer resistive to shocks and vibrations, and can withstand high temperatures (See Sidor et al. col. 1, lines 27-44). One having ordinary skill in the art would also have been motivated to use the sensor assembly of Welles in the housing of Sidor et al. in order to reduce the components necessary while simultaneously providing a highly reliable rotary switch (See Welles col. 1, lines 33-39).

Regarding claims 2, Welles teaches the rotor being made of plastic (See Welles col. 6, lines 19-41).

Regarding claims 4, 7 and 30 Welles teaches the sensors being encapsulated and surface mounted onto the surface of a printed circuit board having conductor tracks thereon (See Welles FIG. 2, and col. 6, lines 19-41).

Claims 2, 5 and 28 (as best understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf et al. in view of Bauer et al. (US 6,365,424). Wolf et al. teaches the features of claim 1, and further teaches of using a plastic housing (See Wolf et al. col. 11, lines 25-39) that allows for electrical isolation of the sensor without interfering with the magnetic fields, however, it does not teach of stamped conductor tracks. Bauer et al. teaches stamped conductor tracks for a

sensor arrangement that are molded into plastic (See FIG. 6, step S1). It would have been obvious at the time the invention was made to make the conductors stamped grids. One having ordinary skill in the art would have been motivated to do so to formulate the housing from plastic and encapsulate the conductor tracks therein (See Bauer et al. col. 4, lines 42-52).

Claims 32 and 12 a are rejected under 35 U.S.C. 103(a) as being unpatentable over Welles (US 4,415,856) in view of Sidor et al. (US 3,988,710), and further in view of Chou (US 6,236,002). Welles in view of Sidor et al. teaches the features of claims 1 and 9 and noted above. However, this combination does not teach snap action latch members between the housing and the panel. Chou teaches using snap action latches between the housing and the board to which it is attached (See FIG. 3, items 14 and 32). It would have been obvious at the time the invention was made to incorporate such a fastening means in the combination of Welles in view of Sidor et al. One having ordinary skill in the art would have been motivated to do so to provide quick and efficient fastening means for rotary sensors without the aide of additional components.

Regarding claim 12, the combination teaches a handle located on the side of the panel opposite the electrical components (See Welles FIG. 2, handle 50b).

Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welles (US 4,415,856) in view of Sidor et al. (US 3,988,710), and further in view of Decker et al. (US 6,404,354). Welles in view of Sidor et al. teach a printed circuit board, the conductor tracks making contact with such board, and an electronic evaluation circuit on the printed circuit board (See Welles FIG. 2, note package 54 and col. 6, lines 19-41). However, this combination does not teach any incorporation into an electric appliance. Decker et al. teaches incorporating a rotary switch into an electrical appliance. It would have been obvious to incorporate such switch accordingly in order to provide a highly reliable rotary switch to control such appliance (See Welles col. 1, lines 33-39).

Regarding claim 14, this combination also does not teach providing an electrical switch. Decker et al. also teaches providing an electrical switch to inside the housing (See FIG. 2, items 28 and 29). It would have been obvious at the time the invention was made to incorporate such switch into the housing to provide an indexing function to the rotary position sensor

that provides reference locations (See Decker et al. col. 2, lines 5-34).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf et al. in view of Alfors (US 5,512,820). Wolf et al. teaches the features of claim 15, except for an intermediate portion of the rotor. Alfors teaches a rotor comprising a portion that contacts the housing and an intermediate portion containing the magnet (See Alfors FIG. 6, item 108). It would have been obvious at the time the invention was made to incorporate the intermediate portion of Alfors in order to provide an extension to the rotor to hold the magnet (See Alfors col. 5, line 66 to col. 6, line 14).

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Welles (US 4,415,856) in view of Sidor et al. (US 3,988,710), as applied to claims 1 and 2 above, and further in view of Bissig et al. (US 4,843,196). The noted combination teaches the features of claims 1 and 2 and the features of claim 24 as noted above, however the combination does not teach of molding the stator. Bissig et al. teaches of molding the stator or housing out of plastic, i.e., thermoplastic (See Bissig et al. col. 2, lines 55-61). It would have been obvious at the

time the invention was made to mold the stator and housing as taught by Bissig et al. in order to provide precise components and to reduce costs (See same paragraphs of Bissig et al.).

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Welles (US 4,415,856) in view of Sidor et al. (US 3,988,710), as applied to claim 1, and further in view of Roze et al. (US 6,252,394). Welles in view of Sidor et al. does not teach latching elements on the housing. Roze et al. teaches a rotary movement sensor wherein a set of latches on the stator housing interact with the shape of the rotor (See Roze et al. FIG. 1, latching elements 13 of housing 3 and rotor 4). It would have been obvious at the time the invention was made to incorporate the latching elements as taught by Roze et al. One having ordinary skill in the art would have been motivated to do so to snap-fasten the rotor in the housing and prevent movement axial between the stator and rotor (See Roze et al. col. 3, lines 45-53).

Allowable Subject Matter

Claims 16-22, 25 and 33-36 are objected to as being dependent upon a rejected base claim, but would be allowable if

rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 16 and 25, while the prior art discloses varying methods for calibrating a rotary position sensor, such as by rotating the sensor and pole pieces, by rotating the rotor with the magnet thereon or by calibrating the sensor apparatus electronically, the prior art does not disclose the magnet mounted within the rotor being adjustable or rotable with respect to the rotor.

The remaining claims, which depend from claim 16, have allowable subject matter for the same reasons as outlined for claim 16.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Those reference listed in the PTO-892 not applied in this rejection are being cited because they contain varying designs for rotary position sensors or have features that illustrate the state of the art to which the claimed invention pertains.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J Whittington whose telephone number is (571) 272-2264. The examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kenneth J Whittington
Examiner
Art Unit 2862

JAY PATIDAR
PRIMARY EXAMINER

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